Proposed State Implementation Plan (SIP) addressing 1 Hr Ozone Attainment

Public Q/A Meetings June 14 and June 16

Public Meeting Format

- Provide Background on the 1-Hr Ozone SIP
  - » 5 min
- Present Main SIP Elements and Answer associated Questions
  - » 40 min
- Present Refined Rate-of-Progress Budgets and Plan Options & Trade-offs
  - » 10 min
- Walk through the proposed Rule Structure
  - » 10 min
- Provide an Overview of the Attainment Demonstration and AQ Impact Analyses
  - » 10 min

Background -Attainment Demonstration for the 1-Hour Ozone NAAQS

Purpose - To Demonstrate that Wisconsin Will Attain and Maintain the 1-Hour NAAQS for Ozone.

- Requirement from the 1990 Clean Air Act Amendments (Part D & Section 110)
- Comprehensive SIP originally due Nov 1994
- Includes
  - Specified Enforceable State Regulations (VOC RACT, I/M, etc)
  - Credit for National Regulations - All Sectors
  - Meeting of Rate-of-Progress Emission Reductions through Enforceable Mechanisms

Health Effects of Ozone

When inhaled at harmful levels, ozone can:

- pose health problems for children, asthmatics, the elderly and healthy adults
- cause acute respiratory problems
- aggravate asthma, emphysema and bronchitis
- lead to hospital admissions and emergency room visits
- impair the body's immune system defenses

Primary SIP Elements

- Existing Point Source NOx Controls
- New/Modified Point Source NOx Controls
- New VOC RACT Requirements
- NOx Pass/Fail for Vehicle I/M Tests
- Excess VOC Emissions Fee - 2008
- Definition of Control Region(s)
- Rate-of-Progress Emission Control Plan
- Ozone Impact Assessment and 2007 1-Hr Attainment Demonstration for WI

Stationary Source NOx Performance Standards - Overview

Program Components

- EGU ROP Requirement
- Performance Standards - Existing Sources
  - Combustion Tuning - smaller sources
  - Combustion Optimization - medium sources
  - Emission Limits - larger sources
- Performance Standards - New Sources
  - Combustion Tuning - smaller sources
  - Combustion Optimization - medium sources
  - Emission Limits - larger sources

Stationary Source NOx Performance Standards - a Primary SIP Element

Large EGU Boiler Requirements - Primary mechanism to meet ROP reduction goals

- Combustion modifications and post combustion control - $1,200 to $1,500 ton
- Rule Requirements
  - > 17 Boilers => 500 mmbtu/hr
  - > Seasonal Emission Limits
    - 2002 = 0.25 to 0.31 lbs/mmbtu
    - 2005 = 0.25 to 0.30 lbs/mmbtu
    - 2007 = 0.25 to 0.29 lbs/mmbtu
  - > Part 75 Monitoring - existing monitoring

Stationary Source NOx Performance Standards

Combustion Tuning - Combustion air and fuel consumption

- Simple Combustion Process (e.g. a single combustion point and/or non-cyclic operation)
- Cost Range - expected cost savings
- Smaller Boiler, Furnaces, Process Heaters, Asphalt Plants, CTs, ICE, etc... - 180 units / 3 tpd
- NO Equipment modifications
- Rule Elements
  - > Annual tune-up before each ozone season
  - > Monitoring/tuning by combustion analyzer
  - > Maintain records of tune-up procedure and results

Stationary Source NOx Performance Standards

Combustion Optimization - Operating in a high efficiency / low NOx emission manner.

- Combination of tuning and combustion techniques.
- Complex combustion processes (e.g. multiple firing points and/or variable load requirements)
- No requirement for equipment modification
- Cost range - expected cost savings
- Medium Boilers, Furnaces, Kilns - 20 units / 2.0 tpd
- Rule Elements
  - > One time engineering analysis of combustion process
  - > Perform optimization and determine low NOx operation over load range - flexibility
  - > Operate following low NOx curve
  - > Monitoring with combustion analyzer and maintain records

Stationary Source NOx Performance Standards

Existing Source Emission limits - Levels consistent with modification of the combustion process and equipment for practical low cost NOx reductions

- Equipment upgrades and modifications
- Cost Range - $ 0 to 200 / ton
- Large Boilers, Furnaces, CTs, ICE - 21 units / 4.0 tpd reduction (less ROP EGUs)
- Rule Elements
  - > Annual Emission Limits
  - > Part 60 monitoring - determination of emission rate
  - > No additional reporting

Stationary Source NOx Performance Standards

New Source Requirements

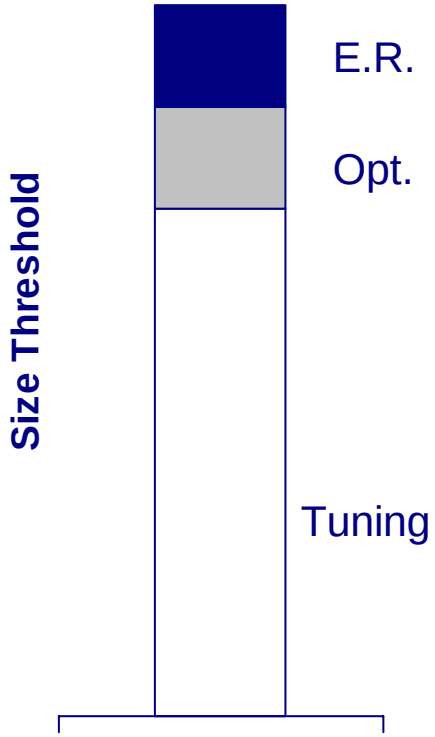
- Augment PSD and NSR programs - Statewide
- Emission Limits - Targeted Levels to be consistent with "standard" low NOx emission technologies for new sources.
- Offset requirement - Primary and Secondary
  - permanent reduction from shutdown, permanent modifications, etc…
  - Baseline determined during permitting process
- Part 60 monitoring - determine emission rate compliance

Stationary Source NOx Performance Standards

Compliance Options

- Emission Rate Averaging
  - > Emission rate limit
  - > Common ownership
  - > Like or more stringent monitoring requirement
  - > New or Existing
- Trading
  - > Emission rate requirement under Performance Standards
  - > Primary and Secondary Control Regions
  - > 1999 Baseline
  - > Part 75 monitoring

Stationary Source NOx Performance Standards - Component Integration



Category	Tuning/Opt	E.R.
ROP affected EGUs	17 - 10.0	17 - 71
Solid Fuel Boilers	8 - 0.7	8 - 1.8
Gas/Oil Boilers	64 - 4.3	4 - 0.9
Furnaces	24 - 1.4	6 - 1.3
Kilns	1 - 0.02	0
CTs	6 - NA	6 - NA
ICEs	15 - 0.4	3 - 0.2
Other Combustion (a)	100 - 0.4	0

(a) Process Heaters, Dryers, Ovens, Asphalt plants

NA – Affected units anticipated to be operating at or below requirements

Stationary Source NOx Performance Standards

Anticipated Comments

- Emission Rate Limits and Averaging Times
- Implementation time frames
- Monitoring Requirements
- Combustion Tuning and Optimization Requirements
- Thresholds / Applicability

New VOC RACT Elements in SIP

- RACT is required in SIP for all major sources of VOC emissions
- Maximum theoretical emissions are used to determine a major source for VOC RACT rules
- RACT needed for three additional categories: industrial cleanup solvent cleaning, ink manufacturing and plastics parts coating
- Rule addresses Industrial Clean-up Solvent Cleaning
- Administrative orders will address ink manufacturing and plastics parts coating categories

Industrial Cleanup Solvent Cleaning RACT Rule

- Emissions restrictions through solvent VOC content limitations
- Operational practices
- Control system requirements
- Recordkeeping requirements

Data Analysis: Part 1

- Based on 1998 point source Air Emissions Inventory (i.e. AEI) data.
- 173 of 625 reporting point sources in southeastern Wisconsin could potentially be impacted.
- 195 tons per year (0.5 - 0.6 tpd) of estimated industrial cleanup solvent VOC emissions were reported.

Industrial Cleanup Solvent Cleaning RACT Rule

Data Analysis: Part 2

1998 AEI Top Industry Groups for Estimated Industrial Cleanup Solvent VOC Emissions (tons per year)

Group description	Emissions	%	# of sources
Fabricated metal products (except machinery and transportation equipment)	70.1	36.0	17
Printing, publishing and allied industries	65.6	33.7	16
Industrial and commercial machinery and computer equipment	28.7	14.8	17
Furniture and fixtures	20.2	10.4	10
Electronic and other electrical equipment and components (except computer equipment)	2.8	1.4	11
Rubber and miscellaneous plastic products	2.7	1.4	13
totals	**190.1**	**97.7**	**84**

Industrial Cleanup Solvent Cleaning RACT Rule

Issues or Areas of Expected Comment

- Use of solvent VOC content and solvent VOC partial vapor pressure to restrict emissions.

Primary SIP Elements - Mobile

NOx I/M Cutpoint Option

- Enforce vehicle inspection/maintenance “cutpoints” (pass/fail limits) for NOx emissions
- Initiate program change May, 2001
- Projected to reduce NOx emissions by 13 and 7 tons per day during 2002 and 2007
- Annual repairs & time cost is ~ $2 million
- On-Board Diagnostics (OBD) testing for newer vehicles initiated during 2001 (or 2002) would displace cutpoint enforcement once initiated (MY 96+ or 98+ vehicles)

NOx I/M Cutpoints - Comments/Questions

- Does the enforcement of NOx I/M cutpoints represent an effective control option that should be part of the 2002- 2007 Rate-of-Progress (ROP) Plans ?
- Should the Plan incorporate a short (1 cycle) Phase-in for NOx Cutpoints ?
  - > *(an additional NOx reduction burden would shift to point sources for the 2002 ROP Plan)*
- How should Repair Technician Training be augmented for NOx-related maintenance/repair ?

Primary SIP Elements

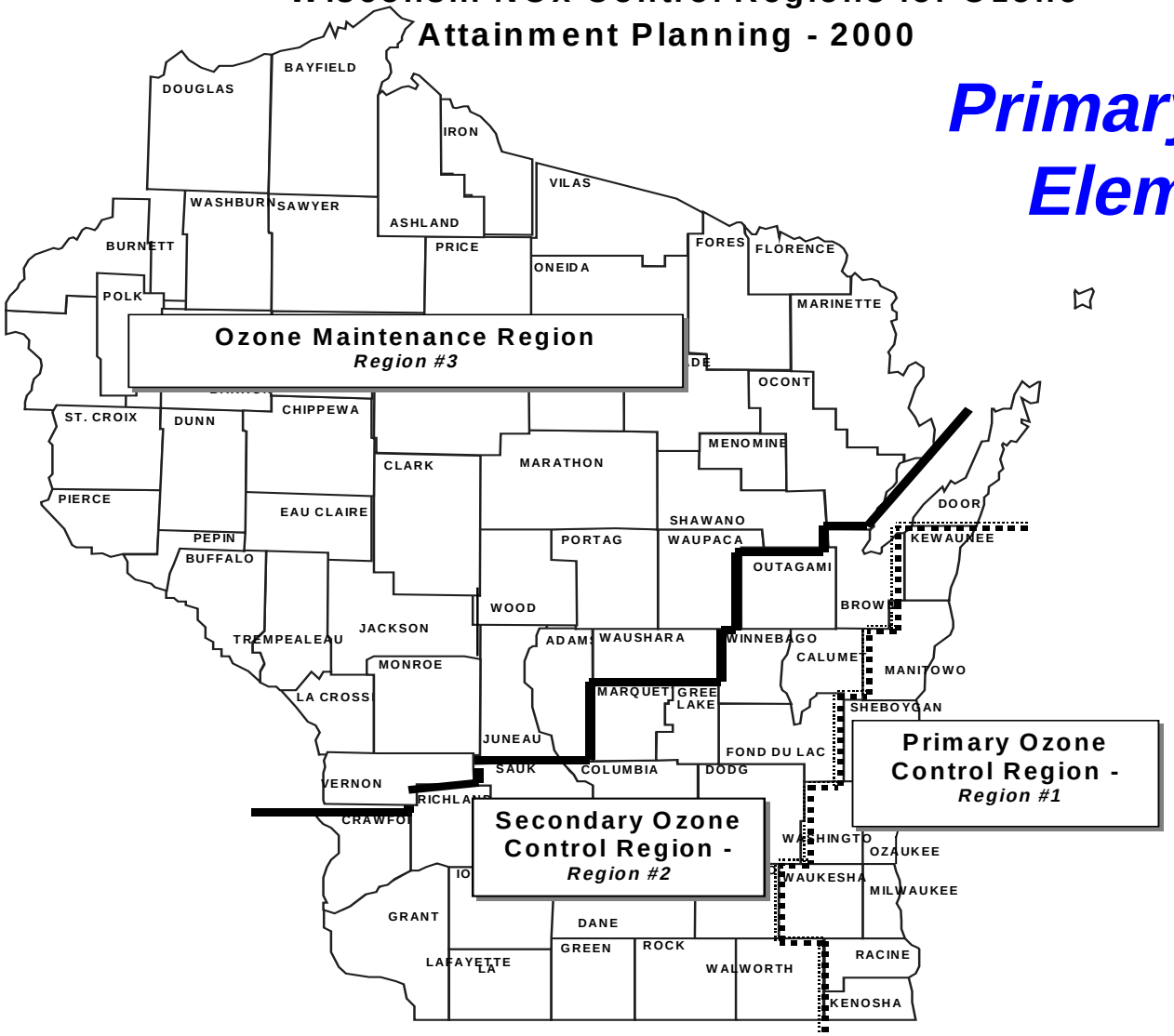
Excess VOC Emissions Fee - 2008

- Applies if can't redesignate to Attainment
- $5000/ton ($7000+ w/ Inflation Adjustment)
- Excess is that beyond 80% of 2007 Baseline
  - eg, charged to roughly 20% of 2007 VOC emissions from affected sources
- Applies to Major Sources in 6 Severe Co's
- Potential to delay 1 year if SIP implemented

FIGURE 1

Wisconsin NOx Control Regions for Ozone Attainment Planning - 2000

Primary SIP Elements



WI's 1 Hr Ozone SIP - Public Meetings - June 14 & 16

Primary SIP Elements

Scope of Proposed Stationary Source Emission Controls						
	Offsets for Major NOx Sources[1]	**Minimum Performance Standards for New Facilities**	**Minimum Performance Standards for Existing Facilities**	**Rate-of-Progress Plan for 2002** *Large Electric Generation Facilities (EGUs)*	**Rate-of-Progress Plan for 2005** *Large Electric Generation Facilities (EGUs)*	**Rate-of-Progress Plan for 2007** *Large Electric Generation Facilities (EGUs)*
Primary Ozone Control Region	**1 to 1** **2001**	**2001**	**2002 or 2005** ROP Options for Non-EGU & Small EGU Sources	**0.24-0.30 lbs/mmbtu** EGU System Average Rate	**0.23-0.28 lbs/mmbtu** EGU System Average Rate	**0.22-0.27 lbs/mmbtu** EGU System Average Rate
Secondary Ozone Control Region			**No ROP Requirement** **and** **Voluntary NOx Reductions by EGU's** **and** **Voluntary Combustion Optimization, Tune-up and NOx Performance Commitments by Non-EGU's**			
Ozone Maintenance Region	**No Offsets Required**	**Permit Target 2001-2006** **Requirement in 2007**				

Meeting Rate-of-Progress

9 County VOC Emissions and Reductions

1990 Adjusted Baseline Emissions

333 to 331 tons per day

Forecast Emissions

- 2002 233 tpd
- 2005 224 tpd
- 2007 217 tpd

Meeting Rate-of-Progress

"Percentage-point" Changes for VOCs

Year	%-point reduction	%-point goal	%-point shortfall
2002	30%	36%	6%
2005	32.3%	45%	12.7%
2007	34.4%	51%	16.6%

Meeting Rate-of-Progress

9 County NOx Emissions and Reductions

1990 Adjusted Baseline 378 to 375 tpd

	Forecast (no new controls)
2002	417 tpd
2005	396 tpd
2007	383 tpd

Meeting Rate-of-Progress

NOx Emissions Target, 9 Counties

2002	355 tpd	(6% below 1990)
2005	328 tpd	(12.7% below 1990)
2007	313 tpd	(16.6% below 1990)

Meeting Rate-of-Progress

Proposed Ozone ROP Budgets – 2002, 2005, 2007
June 14, 2000

% Reduction *Relative to* ***"1990 Adjusted Baseline"***	**2002 ("36%")**		**2005 ("45%")**		**2007 ("51%")**	
	VOC 333 tpd Baseline	**NOx** 378 tpd Baseline	**VOC** 331 tpd Baseline	**NOx** 376 tpd Baseline	**VOC** 331 tpd Baseline	**NOx** 375 tpd Baseline
Primary Ozone Control Region Budget	**233 tpd**	**355 tpd**	**224 tpd**	**328 tpd**	**217 tpd**	**313 tpd**
Creditable Reduction	**30%**	**6%**	**32.3%**	**12.7%**	**34.4%**	**16.6%**

Options reflect latest guidance on projecting stationary and mobile source emissions

Meeting Rate-of-Progress

Emission Reductions Needed

	No I/M cutpoints	With I/M cutpoints
2002	62 tpd	48 tpd
2005	68 tpd	57 tpd
2007	71 tpd	63 tpd

Meeting Rate-of-Progress

1-Hr Ozone Attainment Demonstration – Proposed Mobile Sector Budgets

Counties with Ozone Attainment or Maintenance Conformity Budgets	**2002 JUNE**, 2000 Proposal		**2005 JUNE,** 2000 Proposal[2]		**2007 JUNE,** 2000 Proposal[2]	
	VOC (TPD)	**NOx** (TPD)	**VOC** (TPD)	**NOx** (TPD)	**VOC** (TPD)	**NOx** (TPD)
Milwaukee, Racine, Kenosha, Waukesha, Washington, & Ozaukee	**43.5**	**103.5-116.2[1]**	**36.7**	**84.1-93.5**	**32.2**	**71.4-77.8**
Sheboygan	**4.5**	**9.4-10.3**	**3.7**	**7.4-8.1**	**3.3**	**6.4-6.8**
Manitowoc & Kewaunee	**6.6**	**11.8**	**6.3**	**10.4**	**6.3**	**9.8**

1Denotes Budget with and without I/M cutpoints, assumes high VMT growth and 7.5% buffer.
2Represents projections resulting from refined EPA guidance on the impact of Tier 2 and low sulfur fuel, and latest speed profiles.

Meeting Rate-of-Progress

OPTIONS FOR MEETING RATE-OF-PROGRESS –
Primary Control Region June 14, 2000

Options for NOx Control to address ROP	**Option 1A** EGUs and Large Industrial Sources	**Option 1B** Large EGUs only	**Option 2A** EGUs and Large Industrial Sources	**Option 2B** Large EGUs only
	With NOx Cutpoints **Cutpoints: 14 tpd in 2002, 11 tpd in 2005, 8 tpd in 2007** ***Includes 2001 New Facility Performance Standards***		**Without NOx Cutpoints** ***Includes 2001 New Facility Performance Standards***	
2002 **62 tpd NOx Reduction**	EGU Compliance Rate: **0.31** lb/mmbtu Performance Standards for Existing Facilities are Fully Implemented	EGU Rate Compliance: **0.29** lb/mmbtu No Performance Standards	EGU Compliance Rate: **0.28** lb/mmbtu Performance Standards for Existing Facilities are Fully Implemented	EGU Compliance Rate **0.25** lb/mmbtu No Performance Standards
2005 **68 tpd NOx Reduction**	EGU Compliance Rate: **0.30** lb/mmbtu Performance Standards for Existing Facilities are Fully Implemented	EGU Compliance Rate: **0.27** lb/mmbtu No Performance Standards	EGU Compliance Rate: **0.27** lb/mmbtu Performance Standards for Existing Facilities are Fully Implemented	EGU Compliance Rate **0.25** lb/mmbtu No Performance Standards
2007 **71 tpd NOx Reduction**	EGU Compliance Rate: **0.29** lb/mmbtu Performance Standards for Existing Facilities are Fully Implemented	EGU Compliance Rate: **0.26** lb/mmbtu No Performance Standards	EGU Compliance Rate: **0.27** lb/mmbtu Performance Standards for Existing Facilities are Fully Implemented	EGU Compliance Rate **0.25** lb/mmbtu No Performance Standards

Options reflect latest guidance on projecting stationary and mobile source emissions

Walking Through the Rule Package

Excess Emissions Fee (pp.2-3)

- Begins in 2008
- $5000 (1990 dollars) per ton of VOCs in excess of 80% of the baseline amount
- NR 410

Industrial Cleanup Solvent Cleaning (pp.3-10)

- Applies in 9 counties
- Provides RACT for certain source categories
- NR 423

Walking Through the Rule Package

NOx Control Rule Definitions (pp. 10-12)

- Includes definition of "primary ozone control region"
- Includes definition of "secondary ozone control region"
- NR 428.02

NOx Control Rule Requirements for New Sources (pp.12-20)

- Offsets
- Combustion optimization
- Annual burner tune-up
- Performance standards
- Monitoring
- Recordkeeping /reporting
- NR 428.04

Walking Through the Rule Package

NOx Control Rule Requirements for Existing Sources (pp. 20-26)

- Combustion optimization
- Annual burner tune-up
- Performance standards
- Monitoring
- Recordkeeping /reporting
- NR 428.05

NOx Control Rule Requirements for Compliance (pp. 27-28)

- Emissions averaging
- Emissions trading
- Reductions must be surplus, quantifiable and enforceable
- NR 428.06

Walking Through the Rule Package

NOx Control Rule Monitoring and Reporting Requirements (pp. 28-38)

- General requirements
- Specific provisions for monitoring NOx and heat input (pp. 31-35)
- Quarterly reporting
- Petitions (p.37)
- NR 428.07 - 428.11

NOx Control Rule Requirements for Combustion Optimizations (pp. 38-43)

- Plan submittal, evaluation, revision (pp.38-40)
- Proper facilities, witnessing and calibrations (pp.40-41)
- Optimization procedures and reporting (pp.41-43)
- NR 439.096

Walking Through the Rule Package

NOx Control Rule Requirements for Burner Tune-ups (pp. 43-45)

- Notification
- Equipment calibration (pp.43-44)
- Tune-up procedures (pp.44-45)
- Reporting (p. 45)
- NR 439.097

NOx Control Rule Requirements for Motor Vehicle Inspections (p. 46)

- Inspection for NOx
- Compliance with emission limitations after May 1, 2001
- NR 485.04(9)

1-Hour Attainment Demonstration Air Quality Analyses

Attainment Analysis

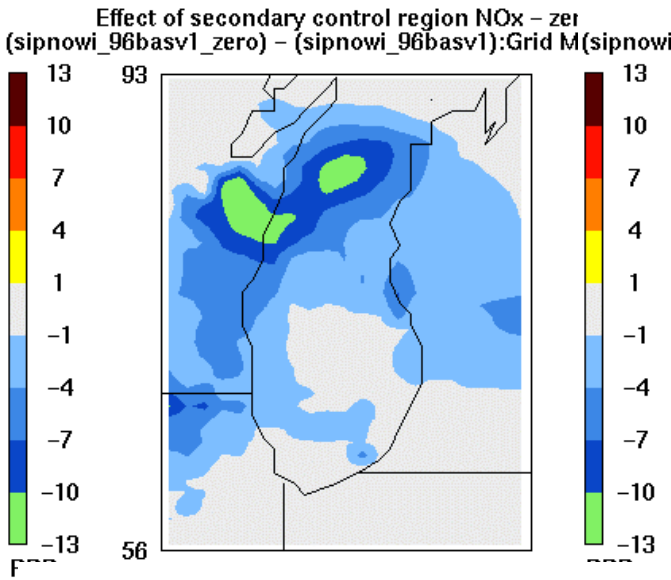
- Key Assumptions
  - Attainment Year 2007
  - NOx SIP Implemented Except in Wisconsin
  - Tier 2 and Low Sulfur Gasoline Included
- Meets EPA's Statistical Attainment Test
- Analysis of Air Quality Monitoring Data Supports Regional NOx Attainment Strategy
- ***Strategy Does Not Attain 8-Hour Standard***

1-Hour Attainment Demonstration Air Quality Analyses

Maintenance Analysis

- Modeling Analysis
  - 2 Episodes (July 91 and July 95)
  - Zero-out Anthropogenic NOx in Secondary Control Region
- Maximum Air Quality Effect from Test
  - 20 ppb in Ozone in Nonattainment Area
  - 37 ppb of Ozone in Attainment Areas
- Need for Offsets and New Source Performance Standards in Secondary Control Region

Ozone Difference Plot



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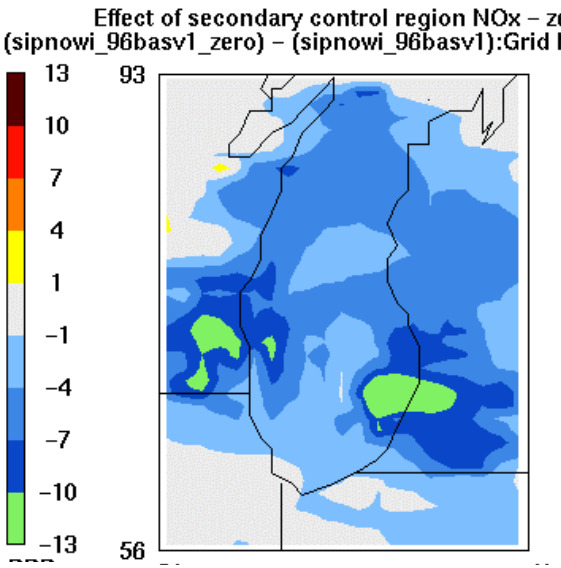

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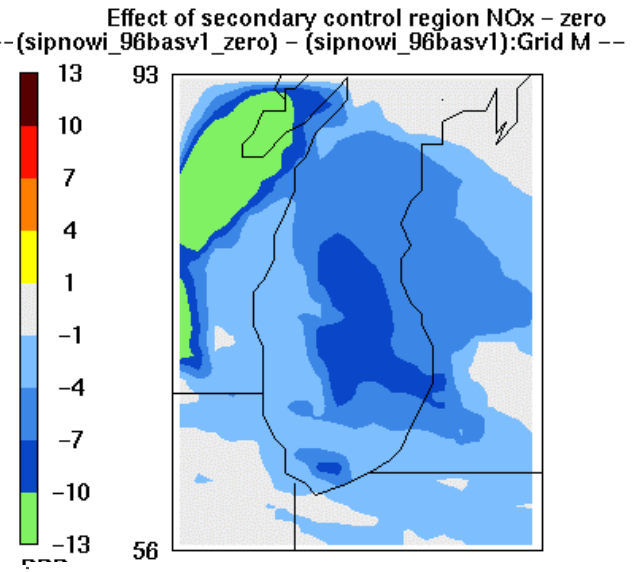

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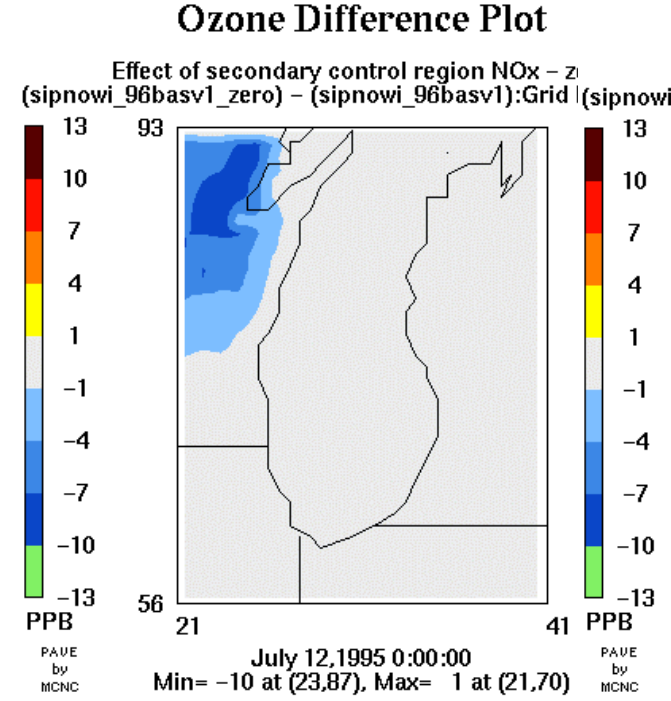

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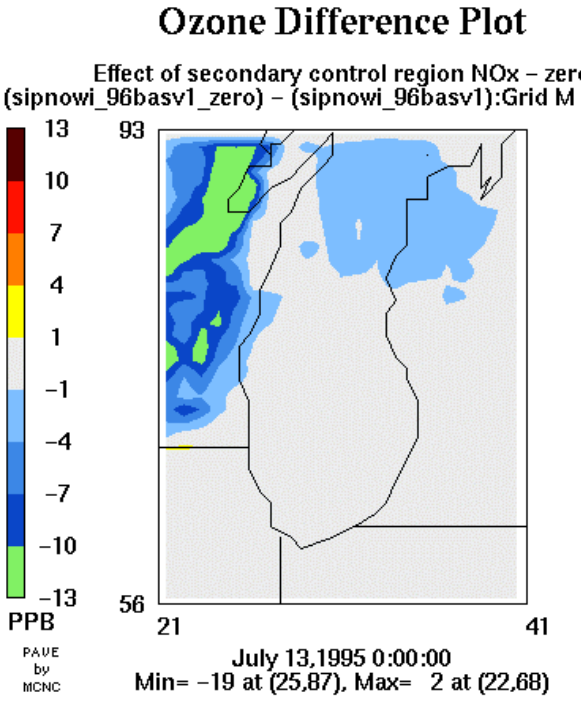

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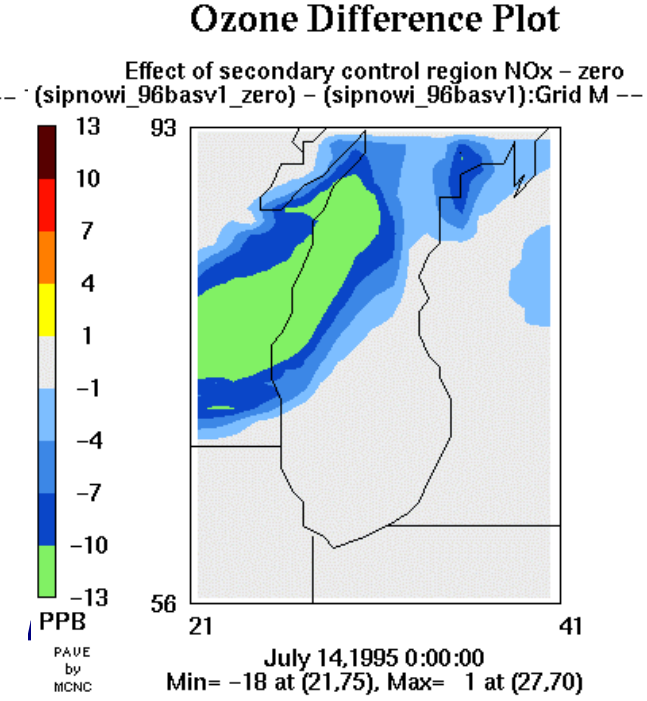
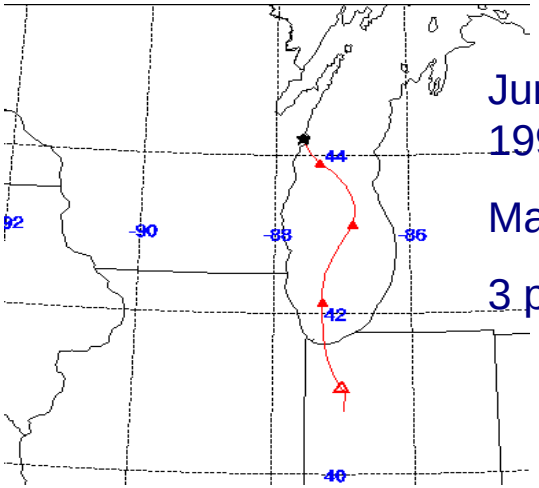


1-Hour Attainment Demonstration
Air Quality Analyses

Maintenance Analysis (Continued)

- Trajectory Analysis
  - HYSPLIT Model - Near Surface Trajectories
  - 1991 through 1999 Exceedance Days
- Results
  - 1/2 Time Trajectory from SW, 1/2 Time from S
  - Frequent Contribution to Exceedances from NOx Emissions in Secondary Control Region
- Need for Offsets and New Source Performance Standards in Secondary Control Region

1-Hour Attainment Demonstration
Air Quality Analyses - Trajectories



June 28, 1997

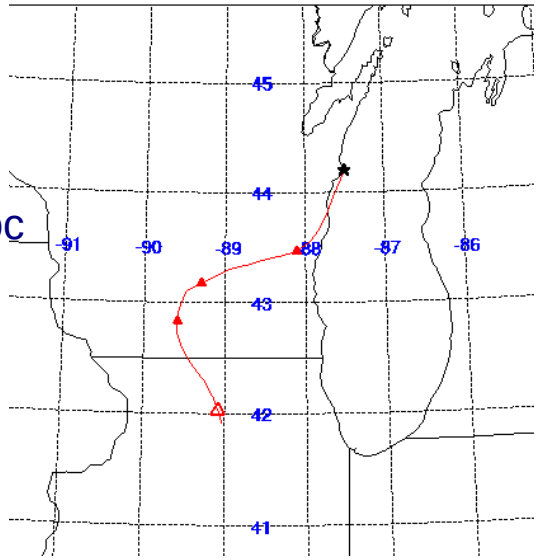
Manitowoc

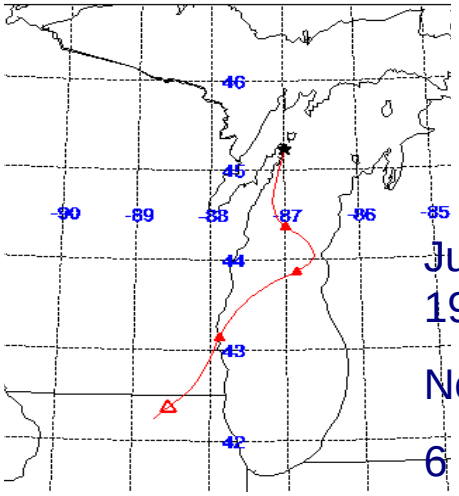
3 pm

June 29, 1997

Manitowoc

6 pm





June 28, 1997

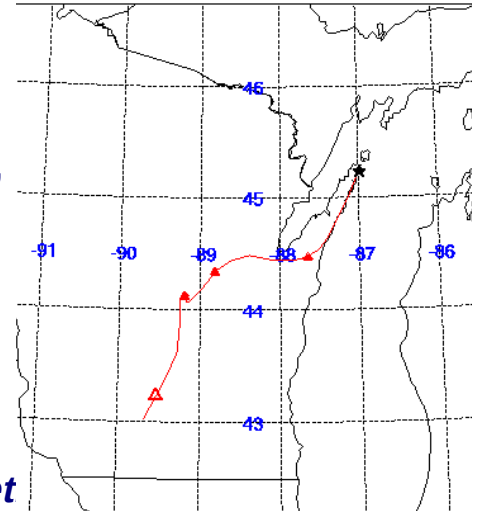
Newport

6 pm

June 29, 1997

Newport

6 pm



Hearings on the 1 Hour Ozone SIP

- June 27 - Kenosha County Center
- June 28 - Havenswood State Forest Auditorium (Milwaukee)
- June 29 - Appleton Public Library
- Formal Comments until July 14
  - > to Bureau of Air Management, WI-DNR
- Informal Comment and follow-up to formal comments expected through the end of July
- Hearings and Comment Notice
  - http://www.dnr.state.wi.us/org/aw/air/hot/1hrsip_p3.htm